UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/774,948	02/10/2004	Anders Astrom	99999-999999 (Formerly 19	8639

26694 7590 08/23/2007		EXAMINER
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998		TSAI, TSUNG YIN

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
08/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *8/1/2007*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-16* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-16* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>01 August 2007</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☒ None of:

        1. ☒ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____.

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>8/1/2007</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAIL ACTION

Acknowledge of amendment received on 8/7/2007 and made of record.

Acknowledge of amendment to claims 1-3, 6 and 8-16.

Acknowledge of replacement drawings of Figure 3, 4 and 7.

Acknowledge of amendment of Figure 4, 7 and 18 with reference numbers 8,9 and 10.

Acknowledge that the applicants will submit the requested priority document as

requested.

Acknowledge amendment of the claims with transitional phrases.

Response to Arguments

Applicant's argument – Amended drawings as requested by the Examiner.

Examiner's response – Objections to the drawing withdrawn

Applicant's argument – Amended the claims with transitional phrases.

Examiner's response – Objections to claims with the lack of transitional phrases is

withdrawn.

Applicant's argument – Luminari does not disclose the present invention as recited in

claims 1, 8, 9, 13, 14, and 16. Luminari does not disclose the present invention as

recited in independent claims 1 and 9 since, among other things, Luminari does not

disclose a method or apparatus for imaging characteristics of an object utilizing

measuring of scattered light about the object. Luminari does not, however, disclose

scattered light.

Examiner's response – Luminari discloses in the abstract where this system function

for detecting defects in articles that are being process. This method is carry out by

determining of the defect with the ratio of the light intensity of each point with the mean

of the light intensity of all points of the reflected beam. Light intensity is the dependent

on that amount of light scatter when a constant light source is shine upon it. If the defect

of the article is deform in a very rigid way then the amount of light scatter to be capture

by the detector will be very low, and the defect will be large as a large defect. Luminari

teaches the characteristics of the object utilizing measuring of scattered light about the

object which covers claims 1, 8, 9, 13, 14 and 16.

Applicant's argument – The combination of Luminari and Ervin does not suggest a

method or apparatus utilizing scattered light in combination with reflected light to image

characteristics of an object. Luminari suggests a three-dimensional-sheet-of-light-

system, wherein 3D and intensity is used to detect defects. On the other hand, Ervin

suggests a display system in which the number of rows is reduced. As such, Ervin does

not appear to have any relevance to the present invention as recited in claims 2, 7, 10

and 15. According to the present invention as recited in these claims, data is

compressed in order to be able to measure 3D and scatter simultaneously.

Examiner's response – Luminari teaches regarding scatter light in the abstract. Ervin

discloses how the data in figure 1 is further reducing to that of figure 2 and 6. This

compression by reduction method teaches upon the same lines as the concept of data

compression. Ervin in column 2 lines 40-45 discloses this method work when both

height and width of each character is reduced. Reduction of the height and width of a

character means that there will be less rows and columns of pixel to represent a

character; such that with less pixels means less memory use for storage of that

characters, thus is reflect compression methods. Combining both teaching of Luminari

and Ervin would have been obvious at the time of the invention. With less memory

taking up space due to compression of data by reduction, the system will have more

memory to carry out larger data processing of the 3D and the light scattering faster.

Applicant's argument – The combination of Luminari, Ervin and Kableshkov does not

suggest the present invention as recited in claims 3-6, 11, and 12 since, among other

things, the combination does not suggest a method or apparatus for imaging

characteristics of an object utilizing measuring of scattered light about the object or a

method or apparatus utilizing scattered light in combination with reflected light to image

characteristics of an object. Kableshkov relates to an electronic summation unit,

Examiner's response – Luminari teaches regarding scatter light in the abstract. Ervin

teaches regarding compression by reduction. Kableshkov disclose a unit that function

as a cumlative summation unit, which function as summing floating point data or any

input data. It carry out this function by taking input data and process it row-by-row

(column 1 lines 15-30) as well as column-wise summation (column 1 lines 15-30). The

combine teachings covers all the claims, which call for summation process to be

perform. Kableshkov further disclose that the process of summation can thus enhance

the statistical capabilities by reducing the time for related database query response

(column 2 lines 45-50). This enhancement of faster query response couple with the

more memory for processing, from the combination of Luminari and Ervin, is a great

motivation to combine such teaching for a system to be more resourceful with limited

resources.

Claim Rejections – 35 USC 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1, 8-9, 13-14 and 16 are rejected under 35 U.S.C. 102(b) as being

unpatentable over Luminari (US Patent Number 4.984,172 IDS).

Luminari disclose the method and system that carries the function of imaging

characteristics, comprising:

(1) Regarding claims 1 and 9:

an object (title disclose object as wood panels, abstract disclose object as

plywood panels, figure 1, figure 3, figure 5 disclose what samples of interest are

detected in the object, column 1 lines 60-67) with of a measuring system (abstract

disclose a measuring device for scanning with respect of the x, y and z axes, figure 2

parts 15-18 are the detection devices, column 4 lines 30-35 disclose system that can

determine the length, width and depth of the object of interest) the method comprising:

moving at least one of the measuring system and/or the object in relation another

of the measuring system and the object in a predefined direction (figure 3 disclose that

the object of interest is move in a predetermine direction by the belts, column 2 lines 5-

18 disclose the a predefined direction such as longitudinally, transversally and vertically

with respect to the object of measurement) of movement,

moving the object in relation (figure 3 disclose that the object of interest is move

in a predetermine direction by the belts, column 2 lines 5-18 disclose the a predefined

direction such as longitudinally, transversally and vertically with respect to the object of

measurement) to the measuring system (abstract disclose a measuring device for

scanning with respect of the x, y and z axes, figure 2 parts 15-18 are the detection

devices, column 4 lines 30-35 disclose system that can determine the length, width and

depth of the object of interest),

illuminating the object with incident light (abstract disclose light bean that

transversely onto the surface of the object of interest, figure 6 disclose a light beam and

pat 19 that show the light source, column 3 lines 28-40 disclose a LASER projector or a

light beam), which has limited extension in the direction of movement (abstract disclose

the light been has a limited extension; only in the transverse position of the panel, figure

6 disclose a the light source 19 having a limited extension in terms of 42 as the object of

interest move in predefine direction, column 3 lines 28-40, column 4 lines 30-36),

detecing light reflected from the object (abstract disclose reflected beam use to

measure the object of interest, column 4 lines 25-40 disclose reflected beam to

determine length, width and depth of the object of interest) with an imaging sensor

(abstract disclose a detecting and measuring system where the detecting system

measure the x, y and z axes of the from the reflected light, figure 6 part 40 is a image

sensor, column 3 lines 28-40 disclose a CCD is resolve the reflects into a series of

points) arranged on the same side of the object as the incident light (figure 1-6 disclose

the placement is on the same plane or same side of the object of light),

converting the detected light into electrical charges with the image-processing

sensor (figure 6, column 3 lines 28-40 disclose a detection system that can be a CCD

that is able to convert the reflected light into electrical charges that will the properties of

object of interest),

creating a digital representation of the object (3 lines 28-40 disclose a detection

system that can be a CCD where CCD output digital outputs in respect to the x, y, and z

Cartesian coordinates for the profile) from the electrical charge,

marking the light to strike the object at a predetermined distance (figure 1-6

disclose the light source is set in predetermine distance as the object of interest, figure

4 disclose where the light strike the object from a predetermined distance, figure 6

disclose the predetermine distance between the light source and the object of interest,

column 1 lines 63-67 disclose the pre-established distance) from the imaging sensor

viewed in the direction of movement of the object (figure 1-6 disclose the sensors view

in the direction of the movement of the object, column 2 lines 7-17 disclose the sensors

are adjustable in order to detect the light reflection with different sort of object of

interest, colum 4 lines 10-15 disclose detecting system translate along path of the

movement of object of interest), and

    simultaneously reading out from the digital representation information on a

geometric profile of the object (abstract disclose the x, y and z showing the geometric

profile of the object of interest, column 3 lines 10-15 disclose that sensor can detect the

defects of the object of interest in geometrical terms, column 3 lines 28-38 disclose the

CCD able to form the geometrical profile of the object of interest from the reflect light

into x, y and z coordinates, column 4 lines 20-25 disclose measuring system that is able

to determine the length, width and depth which are geometrical profiles, column 4 lines

30-35) and information on a light scatter (figure 5 disclose the imperfection on the object

of interest that can be determine from the light reflection/light scatter, figure 6 disclose

detector 40 that collects the scatter lights, column 3 lines 28-38 disclose the CCD that

detect the reflected beams for x, y and z coordinates, column 4 lines 3-10 disclose that

the light intensity collected can determine further profile of the object of interest) in a

predetermined area (figure 6 disclose the beam to be only in a predetermine area by the

line 42 and angle of 41, column 3 lines 28-54) around the said profile (3 lines 28-40

disclose a detection system that can be a CCD where CCD output digital outputs in

respect to the x, y, and z Cartesian coordinates for the profile).

    (2) Regarding claim 8:

    reading out from the digital representation information on an intensity distribution

addition to information (column 3 lines 1-20 disclose additional information such as

chromatic discontinuities of the surface, knots, glue or paint stain or spots) on the geometric profile (abstract disclose the x, y and z showing the geometric profile of the object of interest, column 3 lines 10-15 disclose that sensor can detect the defects of the object of interest in geometrical terms, column 3 lines 28-38 disclose the CCD able to form the geometrical profile of the object of interest from the reflect light into x, y and z coordinates, column 4 lines 20-25 disclose measuring system that is able to determine the length, width and depth which are geometrical profiles, column 4 lines 30-35) of the object and the light scatter (abstract disclose reflected beam use to measure the object of interest, column 4 lines 25-40 disclose reflected beam to determine length, width and depth of the object of interest), (abstract disclose the measure of light intensity, column 3 lines 1-5 disclose chromatic discontinuities which is due to light intensity reflection, column 3 lines 28-55 to column 4 lines 1-10 disclose the information that are gather due to light intensity) (3 lines 28-40 disclose a detection system that can be a CCD where CCD output digital outputs in respect to the x, y, and z Cartesian coordinates for the profile).

(3) Regarding claim 13:

wherein the incident light comprise linear light (figure 6, column 3 lines 25-35 disclose a the light source to be LASER, which is seen as a linear light source).

(4) Regarding claim 14:

wherein the incident light comprises of a plurality of points or linear segments (column 3 lines 25-55 disclose the linear light source which detect position of points that are aligned along a straight line).

(5) Regarding claim 16:

wherein in addition to information (column 3 lines 1-20 disclose additional

information such as chromatic discontinuities of the surface, knots, glue or paint stain or

spots) on the geometric profile (abstract disclose the x, y and z showing the geometric

profile of the object of interest, column 3 lines 10-15 disclose that sensor can detect the

defects of the object of interest in geometrical terms, column 3 lines 28-38 disclose the

CCD able to form the geometrical profile of the object of interest from the reflect light

into x, y and z coordinates, column 4 lines 20-25 disclose measuring system that is able

to determine the length, width and depth which are geometrical profiles, column 4 lines

30-35) of the object and the light scatter (figure 5 disclose the imperfection on the object

of interest hat can be determine from the light reflection/light scatter, figure 6 disclose

detector 40 that collects the scatter lights, column 3 lines 28-38 disclose the CCD that

detect the reflected beams for x, y and z coordinates, column 4 lines 3-10 disclose that

the light intensity collected can determine further profile of the object of interest), the

image-processing unit (column 2 lines 5-65 disclose the processing unit) is also

comfigured to read out information on an intensity distribution (abstract disclose the

measure of light intensity, column 3 lines 1-5 disclose chromatic discontinuities which is

due to light intensity reflection, column 3 lines 28-55 to column 4 lines 1-10 disclose the

information that are gather due to light intensity) from the digital representation (3 lines

28-40 disclose a detection system that can be a CCD where CCD output digital outputs

in respect to the x, y, and z Cartesian coordinates for the profile).

Claim Rejections – 35 USC 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 2, 7, 10 and 15 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Luminari (US Patent Number 4.984,172 IDS) in view of Ervin (US

Patent Number 4,168,489).

(1) Regarding claims 2 and 10:

Luminari teaches regarding digital representation.

Luminari does not teach regarding divided up into rows and columns and

that a creating compressed image is created from the digital representation by

reducing the number of rows.

However, Ervin teaches regarding dividing up into rows and columns

(figure 1-2, figure 6) and that a compressed image (figure 6) is created from the

digital representation by reducing the number of rows (figure 2 and figure 6

disclose where the compress image has reduced rows, column 2 lines 50-65

show the compressing for reducing "height" which is seen as rows).

It would have been obvious to one skill in the art at the time of the

invention to employ Ervin teaching to Luminari regarding divided up into rows

and columns and that a compressed image is created from the digital

representation by reducing the number of rows, such that this form of

compression is a way to reduced redundant or repeating data so less memory

will be taken for the storage of the image data.

(2) Regarding claims 7 and 15:

Luminari teaches regarding all the subject matter above.

Luminari does not teach regarding wherein the compressed image is

created by saving for each column the maximum value for the pre-selected rows.

However, Ervin teaches regarding wherein the compressed image (figure

6) is created by saving for each column the maximum value for the pre-selected

rows (column 2 lines 52-63 disclose pre-selected rows, figure 2 and figure 6

disclose where the compress image has reduced rows, column 2 lines 50-65

show the compressing for reducing "height" which is seen as rows, column 4

lines 1-67 to column 5 lines 1-30 disclose that rows that has detection is label as

"1" and that values is save by that row and column).

It would have been obvious to one skill in the art at the time of the

invention to employ Ervin teaching to Luminari regarding wherein the

compressed image is created by saving for each column the maximum value for

the pre-selected rows, such that this form of compression is a way to reduced

redundant or repeating data so less memory will be taken for the storage of the

image data for those of limited storage space or limited bandwidth for the image

data transfer.

5.   Claims 3-6 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Luminari (US Patent Number 4.984,172 IDS) in view of Ervin (US Patent Number

4,168,489) as applied in claims 2 and 10 respectively above, and further in view of

Kableshkov (US Patent Number 5,490,100).

(1) Regarding claim 3 and 11:

Luminari and Erivin teach regarding digital representation by reduction of

rows.

Luminari and Erivin does not teach regarding the reduction of row by

summation of rows in a predetermine order.

However, Kableshkov teaches regarding the reduction of row summation

of rows (column 1 lines 15-20 disclose the cumulative summation on a row-by-

row basis, column 3 lines 55-63 disclose the summation unit capable of fulfilling

the column-wise summation) in a predetermine order (column 10 lines 40-45

disclose a predetermine order according to the format of the in coming bit data).

It would have been obvious to one skill in the art at the time of the

invention to employ Kableshkov teaching to Luminari and Erivin regarding

reduction of row by summation of rows in a predetermine order, such that it will

enhance the statistical capabilities and contributes to the reduction of relational

data base query response time (column 2 lines 45-50) for the data.

(2) Regarding claim 4:

Luminari and Erivin teach regarding all the subject matter above.

Luminari and Erivin do not teach regarding summation performed by analog means.

However, Kableshkov teaches summation is performed by analog means (column 4 lines 50-65 disclose that sign bits, exponents bits and mantissa bits can be handled in an analogous manner using portions of the corresponding register).

It would have been obvious to one skill in the art at the time of the invention to employ Kableshkov teaching to Luminari and Erivin regarding summation performed by analog means. The motivation would that it would conform to standards and requirement such as VAX F-format or IEEE S-format (column 4 lines 50-65).

(3) Regarding claim 5:

Erivin further teaches regarding summation is performed by digital means (column 3 lines 60-67 disclose digital means to effectuation the vertical reduction of the data).

(4) Regarding claims 6 and 12:

Erivin further teaches regarding saving for each column the summation by columns information on the row at which the electrical charge exceeds a predetermined threshold value (column 4 lines 43-47 where logical "1" is seen as the threshold value), indicating that reflected light is detected just in that row, is saved for each column (column 4 lines 1-67 to column 5 lines 1-30 disclose that

rows that has detection is label as "1" and that values is save by that row and

column).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Tsung-Yin Tsai whose telephone number is (571) 270-

1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jingge Wu can be reached on (571)272-7429. The fax phone number for

the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
August 16, 2007

JINGGE WU
SUPERVISORY PATENT EXAMINER